

ABSTRACT OF THE DISCLOSURE

A light regulating device and photonic crystal display device utilizing bandgap controls including a photonic crystal including a material that is capable of varying its refractive index in accordance with an electric field, the photonic crystal having a photonic bandgap in a specific frequency range; and an upper transparent electrode and a lower transparent electrode arranged on an upper side and a lower side of the photonic crystal, respectively, to which a voltage is applied, wherein a size of the photonic bandgap of the photonic crystal is controlled by the voltage applied between the upper transparent electrode and the lower transparent electrode. With the present invention, a reflection-type or penetration-type display is available which has a simple pixel structure, a high light efficiency, and a high color contrast ratio, the display using high reflection factors depending on color ranges of a photonic crystal.